

# Birds of the Riverina 1964-1972 (an historical perspective)

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## ABSTRACT

348 species have been recorded for the Riverina area between 1940 and 2011. 291 were recorded by me between 1964 and 1972, 95 of which were banded at the Inland Fisheries Research Station, 23 banded elsewhere in the Riverina and 173 sight records. An additional 28 species were recorded over the 1962-78 period by other workers (A.Davies, J.Izzard, J.Hobbs, P.Wilson and other joint authors) giving a total of 319 species in the Riverina over that period. The more recent lists of the Bird Atlas 1 and 2 1988-2001 and the Bird Trails document up to 2011, which cover a large proportion of the areas covered in this study, add 29 species to the overall list making a total of 348 species.

**Key words:** Riverina birds; bird banding; Inland Fisheries Research Station; historical occurrence; agricultural lands; changing status of birds.

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## Introduction

My banding activities within the Riverina contributed significantly to my knowledge of birds in that area and to many of the records in this paper (Llewellyn 2015). My frequent travels throughout the Riverina enabled me to develop a comprehensive list of species frequenting this area, and my contacts with other keen bird enthusiasts in the area enabled me to substantiate and add to that list. A main reason for developing the Riverina list was to attempt to add to the efforts of J. Hobbs who published a paper on "The birds of South-west New South Wales" (Hobbs 1961) and to extend his records further east to cover the eastern area of "the Riverina" not covered by him. In addition, the list offered here provides a baseline against which future studies can be compared, particularly with respect to changes in populations driven by changes in habitat and climate.

The boundaries of the Riverina vary with different authors (eg. Leigh and Mulham 1965; Sale 1967) and the Interim Biogeographic Regionalisation for Australia (IBRA) Riverina bioregion (Fig.1). The area covered in this study is shown in Fig. 1, which covers a majority of the land outlined by previous authors, and extends further east than that identified for the Riverina bioregion used in the First and Second Atlas of Australian Birds (Barrett and Silcocks, 2002). The area covered in the Bird Trails of the Riverina and South West Slopes of NSW (2011) list (Fig. 1) extends further east than in this study. The 'Bird Trail' list was developed by the Riverina and South West Slopes Nature Based Tourism Group project "Promotion, Rehabilitation of Riverina Bird Habitat" funded by the Environmental Trust NSW. In my study the western boundary runs from Ivanhoe, east of Balranald to the River Murray.

The southern boundary runs along the Murray River to east of Albury. From the River Murray the boundary runs north to Roundhill including Cootamundra and Lake Cargelligo but excluding West Wyalong, then west to couple up with Ivanhoe again. This area is dissected by the Lachlan and Murrumbidgee Rivers, and includes the Murray River along its southern boundary. It is these rivers and their associated flood plains which give rise to its name, the Riverina, which was coined from the name 'Riverine' from the Entre Rios Province (between two rivers) in Argentina. The Riverina is an alluvial flood plain which merges into rolling hills to the east and much of the west consists largely of featureless salt bush plains dissected by the tree lined water courses.

The area is one of the most productive and agriculturally diverse areas in Australia and is distinguished by its flat plains; warm to hot climate and an ample supply of water for irrigation supplied by the Great Dividing Range and associated Snowy River Scheme. Extensive clearing and development of the area for irrigation has occurred. An approximate vegetation map of the western portion of the area prior to 1972 when this study was carried out is shown in Figure 2 (based on Leigh and Noble 1972). At that time there were six plant alliances making up a majority of this region with two others covering small areas in the west namely Mallee and Bluebush.

Rainfall levels in the Riverina are generally low with a median annual rainfall for most of the region between 250 and 500mm rising to 800mm in the east. The cleared areas have been planted with dry land crops and irrigation crops such as wheat, maize, canola, rice, citrus and wine grapes. Sheep, particularly for their wool, and cattle are farmed extensively in the area.

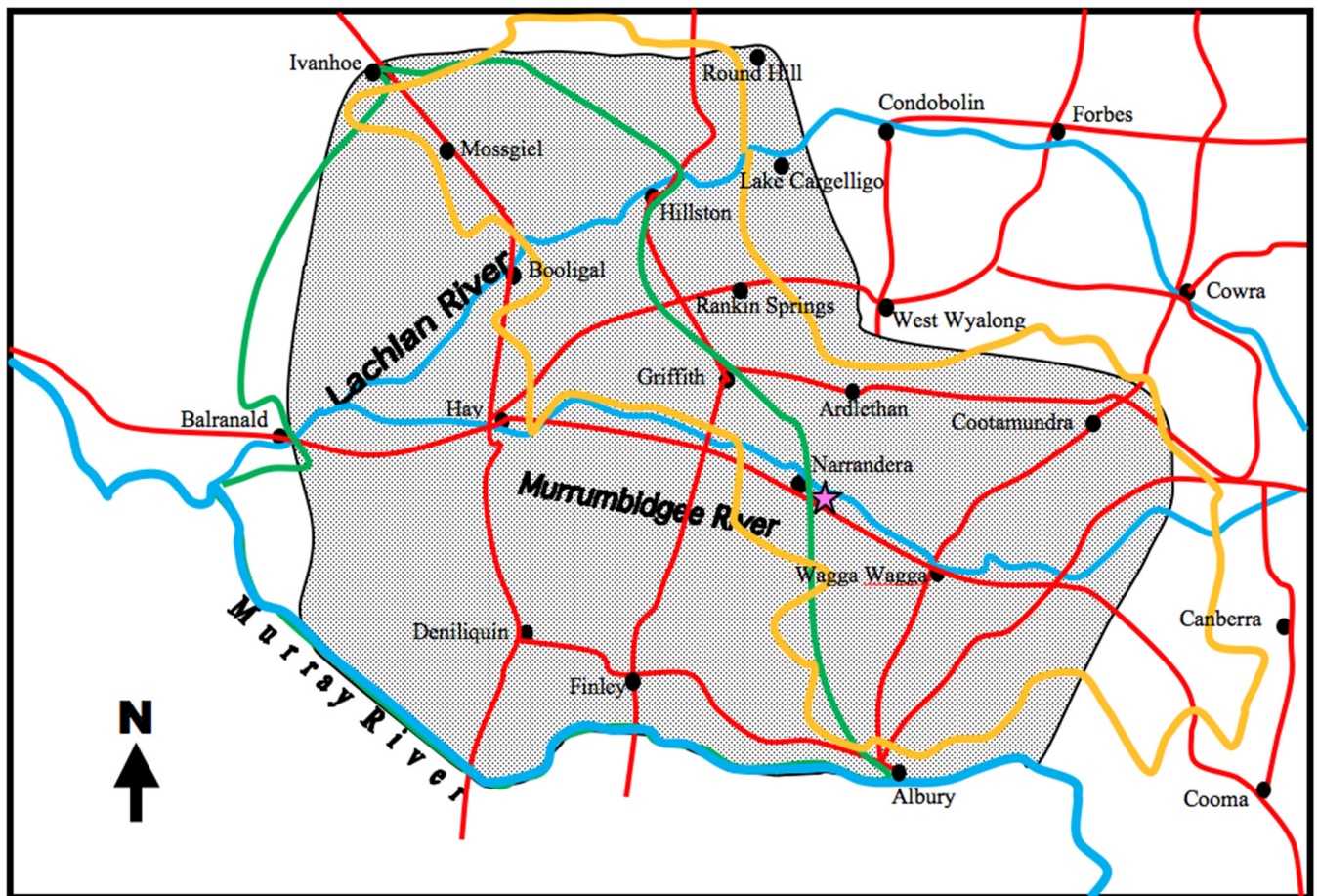


Fig. 1. The extent of the Riverina used in this study (stippled). ★ Location of Inland Fisheries Research Station. — Roads. — Rivers. — Outer boundary of IBRA Riverina bioregion. — Approximate outer boundary of 'Bird Trails of the Riverina and South West Slopes of NSW' (2011) –bird list

## Methods

A list of birds in the Riverina area as defined in (Fig. 1) was compiled. The principal source was my own observations and records from my banding activities at the Inland Fisheries Research Station (IFRS) (now the Narrandera Fisheries Centre) (Lat. 34°47'S Long. 146°34'E), and throughout the Riverina area between 1964 and 1972 (Llewellyn 2015). Records were obtained also from the detailed survey of the Cocoparra National Park (Lat. 34°08'S Long. 146°14'E) carried out by me and contributed to by other authors later (NPWS 1968-78); the Rock Nature Reserve list (NPWS, 1969, A. Davies) (Lat. 35°16'S Long. 147°04'E); within 40km of Narrandera (Hobbs 1983) (Lat. 34°44'S Long. 146°33'E); the Riverina list J. Izzard (pers. comm. 1969) and the Big Springs list centred 25 km South of Wagga Wagga P. Wilson (pers. comm. 1970) (Lat. 35°19'S Long. 147°25'E). Data from a comparison of the first and second Atlas of Australian Birds over a 20 year period between 1977 and 2001 (Barrett and Silcocks 2002) designed to determine the conservation status of woodland-dependent and other bird species in the Riverina is also included. Some miscellaneous records from Square Knob (Lat. 34°31'S Long. 146°36'E), Pulletop Nature Reserve (Lat. 34°57'S Long. 146°04'E), Gunbar Station (Lat. 33°53'S Long. 145°19'E) and

some other reliable records are included. Birds recorded prior to 1940 are summarized by Hindwood (1940) for the Murrumbidgee Irrigation Area which covers a substantial portion of the area dealt with in this paper. Hindwood's records were based on a RAOU camp out near Leeton in September 1939, but also included records from Barrett (1939), McKeown (1923, 1934), Emerson and Ganon (1934), White (1920), Black (1939), Gould League Notes (1938), and other incidental records.

Birds on my compiled list were allocated a status as to their abundance. The status abundant, common, occasional, uncommon and rare was assessed, based on my observations in the field. The status of birds indicated for Hindwood (1940) is based on my assessment of his comments and in many cases was not specifically indicated by him. The status of species from my recordings is compared with both Hindwood's (1940) records and for each of the groups in the Atlas (Barrett and Silcocks 2002) showing (1)  $\geq 20\%$  decrease in reporting rate, (2) stable reporting rate and (3)  $\geq 20\%$  increase in reporting rate between the two atlas periods 1977-81 and 1998-2001.

Wherever breeding was confirmed this has been indicated in the list.

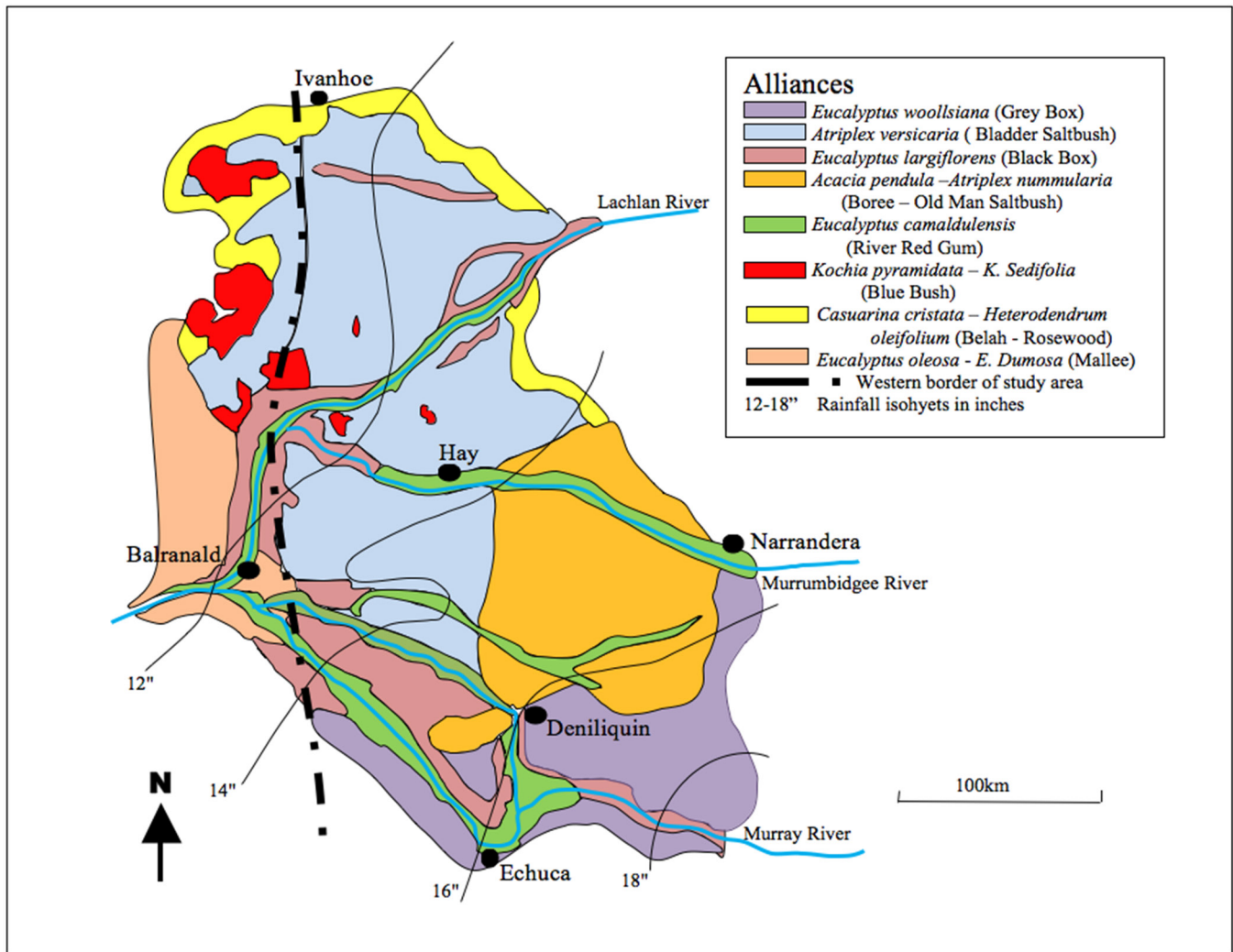


Fig. 2. Plant Alliances in the western portion of the study area. (Based on Leigh and Noble 1972). *Eucalyptus woollsiana* is now included in *Eucalyptus microcarpa* (Grey Box) (Brooker and Kleinig 1999).

## Results

My personal records for the Riverina included 291 species. Nine species were assessed as abundant, 39 common, 83 occasional, 66 uncommon and 94 rare (Table 1). An additional 32 species not recorded by me personally were not assessed for abundance. A total of 319 species were recorded in the Riverina for the 1940-1983 period.

On my initial survey of the Cocoparra Ranges in June 1968 I recorded 74 species. Additional visits carried out by me up to August 1968 and supplemented by other authors later increased the count in this area by 1978 to 148 (see Table 1) (National Parks and Wildlife 1968-1978). The Rock Nature Reserve list compiled between 1964 and 1969 by A. Davies contained 37 species (National Parks and Wildlife 1969), and is shown also in Table 1. J. Hobbs (pers. comm. 1981) supplied me with a list containing 162 species collected between March 1972 and August 1981 within 40 km (25 miles) of Narrandera. In addition he published an updated list up to 1983 (207 species) covering the same area (Hobbs 1983). Both of these lists are combined and attributed to Hobbs in Table 1. J. Izzard's list (pers. comm. 1969), which was collected

in the western  $\frac{2}{3}$ ds of the Riverina between 1964 and 1969, contained 174 species (Table 1). The Wilson's Big Springs list collected between 1964 and 1969 (104 species) covered the eastern  $\frac{1}{3}$ rd of the Riverina. The 78 miscellaneous species collected between 1964 and 1972 were from Square Knob 1, Pulletop Nature Reserve 12, Gunbar Station 3 species, J. Hobbs additions to his list 13 species, J. Izzard additions to his list 1 species, G. Chapman (around 1970) (Pulletop Nature Reserve) 16 species and 32 Riverina general.

The occurrence of most species was confirmed by my own records.

My assessment of the status of each species listed in Hindwood (1940) based on his comments indicated that 2 were abundant, 24 common, 44 occasional, 33 uncommon, 81 rare and 1 indeterminate ( $n=185$ ). A comparison of the status of these species Hindwood (1940) with my 1962-1983 list indicated a higher percentage of rare species in the Hindwood list (Fig. 3), which could be a result of the shorter time span over which species were recorded. All Hindwood's species from the 1940 list were also recorded in my 1964-1972 list. He recorded 62 species breeding in the area.



**Table 1.** Data on birds recorded in the Riverina between 1964 and 1972 listed alphabetically by common names (according to Christidis and Boles 2008). a, abundant. c, common. o, occasional. u, uncommon. r, rare. B, Breeding. x, records for Riverina. Z, John Izzard records (1969). G.G. Chapman. Gu, Gunbar. h, J. Hobbs. p, Pulletop. SK, Square Knob. The Cocoparra list was compiled by L.C. Llewellyn, A. Bryden, E. Atkinson, V. Jenkins, R. Miller, A. Davies, G. Moore, R. Moffat, J. Brickhill and F.K. Hersey. The Rock list was compiled by A. Davies and A. Morris Sept. 1969. J. Hobbs records are from Narrandera Argus Jan 11th 1983, within 40 km of Narrandera. The Big Springs list was compiled by P.Wilson, 102 Coleman Street, Wagga Wagga. J. Izzard list was supplied to me in 1969 for compilation of this report. Hindwood (1940) summarises records prior to 1940. The bird Atlas list (232 species) compares two periods 1977-1981 to 1998-2001. "1" indicates 20% decrease, "2" no change and "3" 20% increase in reporting rates over that time. The Bird Trail (2001) column shows species recorded here but not recorded in the Bird Trail list "A" and birds recorded in the Bird Trail list but not recorded here "N".

English name	Binomial name	Banded IFRS	Riverina banded excluding IFRS	Banded at nest or young Riverina excluding IFRS	Month or range of months found breeding	Total banded Riverina including IFRS	My records 1964-1972 (Riverina)	Cocoparra Range 1968-78	Rock Nature Res 1969	Hobbs 1983 (within 40km of Narrandera)	John Izzard 1969 (Riverina)	Big Springs 25km S of Wagga Wagga	Hindwood MIA 1940	Miscellaneous records up to 1972 (Riverina)	Atlas results (1-3) 1977-1981 and 1998-2001	Bird Trail List 2011
Apostlebird	<i>Struthidea cinerea</i>		19	8	11,12	19	o.B	c	c	B	Z	x	oB		1	
Australasian Bittern	<i>Botaurus poiciloptilus</i>						r				Z	x	rB		2	
Australasian Darter	<i>Anhinga novaehollandiae</i>		44	44	11,12,1,2	44	o.B			x	Z	x	r	p	3	
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>	5				5	o.B	o.B		B	Z	x	uB		3	
Australasian Pipit	<i>Anthus novaeseelandiae</i>	1	4			5	o	c		B	Z	x	u		1	
Australasian Shoveler	<i>Anas rhynchos</i>						u			x	Z		r		3	
Australian Bustard	<i>Ardeotis australis</i>						r						r	Gu		
Australian Hobby	<i>Falco longipennis</i>	1				1	u.B		o.B	x	Z		r		2	
Australian King-Parrot	<i>Alisterus scapularis</i>						r									
Australian Little Bittern	<i>Ixobrychus dubius</i>						r							h		
Australian Magpie (Black-backed)	<i>Cracticus tibicen tibicen</i>	20	22	10	9-11	42	c.B	c	c.B	B	Z	x	o		2	
Australian Magpie (White-backed)	<i>Cracticus tibicen hypoleuca</i>											x				
Australian Owlet-nightjar	<i>Aegotheles cristatus</i>						o.B	r		B			u		3	
Australian Painted Snipe	<i>Rostratula australis</i>						r							h		
Australian Pelican	<i>Pelecanus conspicillatus</i>						o			x	Z	x	r		2	
Australian Pratincole	<i>Stiltia isabellae</i>						u			x	Z		r		1	
Australian Raven	<i>Corvus coronoides</i>	1				1	c.B	c	c	B	Z	x	cB		3	
Australian Reed-Warbler	<i>Acrocephalus australis</i>	111				111	c	r		B	Z	x	cB		3	
Australian Ringneck	<i>Barnardius zonarius barnardi</i>						u.B	o		B	Z		r		1	
Australian Shelduck	<i>Tadorna tadornoides</i>		4	4	10	4	o.B			B	Z		uB		3	
Australian Spotted Crake	<i>Porzana fluminea</i>						r			B	Z		?		1	
Australian White Ibis	<i>Threskiornis molucca</i>		76	76	10-2	76	a.B			x	Z	x	c		1	
Australian Wood Duck	<i>Chenonetta jubata</i>						c.B	c		B	Z	x	oB		3	
Azure Kingfisher	<i>Ceyx azureus</i>						u					x	r		3	
Baillon's Crake	<i>Porzana pusilla</i>	4				4	r	r		x	Z				1	
Banded Lapwing	<i>Vanellus tricolor</i>		7	7	9,10-12	7	u.B			B	Z		o		1	
Banded Stilt	<i>Cladorhynchus leucocephalus</i>															N
Barking Owl	<i>Ninox connexa</i>						u			B						
Bar-shouldered Dove	<i>Geopelia humeralis</i>						o	c		B	Z					
Bar-tailed Godwit	<i>Limosa lapponica</i>						r								1	

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Bassian Thrush	<i>Zoothera lunulata</i>						r							x		
Beautiful Firetail	<i>Stagonopleura bella</i>						r							x		A
Bell Miner	<i>Manorina melanophrys</i>													h		A
Black Falcon	<i>Falco subniger</i>						u			x	Z		r		l	
Black Honeyeater	<i>Sugomel niger</i>						r	No recent		x			r		2	
Black Kite	<i>Milvus migrans</i>						o			x				G	3	
Black Swan	<i>Cygnus atratus</i>		32	32	10-12	32	c. B			B	Z	x	cB	h	3	
Black-breasted Buzzard	<i>Hamirostra melanosternon</i>						r			x						A
Black-chinned Honeyeater	<i>Melithreptus gularis</i>						r			x				xB	l	
Black-eared Cuckoo	<i>Chalcites osculans</i>						r	u		x	Z		r	p	l	
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	l	2			3	c	c		B	Z	x	u		2	
Black-faced Monarch	<i>Monarcha melanopsis</i>														l	
Black-faced Woodswallow	<i>Artamus cinereus</i>						o	c		B	Z		r	p	l	
Black-fronted Dotterel	<i>Elseymornis melanops</i>	2	6	3	11-1	8	o.B	u		B	Z	x	rB		3	
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>						r									A
Black-shouldered Kite	<i>Elanus axillaris</i>		l			l	o.B	o		B	Z	x	rB	B	l	
Black-tailed Godwit	<i>Limosa limosa</i>														l	N
Black-tailed Native-hen	<i>Tribonyx ventralis</i>						o.B			B	Z		c		2	
Black-winged Stilt	<i>Himantopus himantopus</i>						o.B			B	Z		oB		3	
Blue Bonnet	<i>Northiella haematogaster</i>	l	5			6	o. B	c		B	Z		o	x	l	
Blue-billed Duck	<i>Oxyura australis</i>						rB				Z		r		2	
Blue-faced Honeyeater	<i>Entomyzon cyanotis</i>	3				3	o	c. B		B	Z	x	rB		3	
Blue-winged Parrot	<i>Neophema chrysostoma</i>						r							G		
Brolga	<i>Grus rubicunda</i>						r B(2)			x	Z		oB		l	
Brown Cuckoo-Dove	<i>Macropygia amboinensis</i>													p		A
Brown Falcon	<i>Falco berigora</i>	l	3			4	c.B			B	Z		r		l	
Brown Goshawk	<i>Accipiter fasciatus</i>	l	l			2	u	o. B	r	B	Z	x	r		l	
Brown Honeyeater	<i>Lichmera indistincta</i>													G		
Brown Quail	<i>Coturnix ypsilophora</i>						u			B	Z		r		2	
Brown Songlark	<i>Cincloramphus cruralis</i>		9			9	o			B	Z	x	r		l	
Brown Thornbill	<i>Acanthiza pusilla</i>						r	c					rB	l	2	
Brown Treecreeper	<i>Climacteris picumnus</i>	l	3			4	o	c. B		B	Z		cB		3	
Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>	20	2			22	o	c	?	B	Z		rB		l	
Brush Cuckoo	<i>Cacomantis variolosus</i>						r	o								
Budgerigar	<i>Melopsittacus undulatus</i>		l			l	o.B	o. B	o. B	B	Z	x	oB		2	
Buff-banded Rail	<i>Gallirallus philippensis</i>						r			x	Z		o	x	3	
Buff-rumped Thornbill	<i>Acanthiza reguloides</i>						r		?	x			r		3	
Bush Stone-curlew	<i>Burhinus grallarius</i>						o.B						o		l	
Cape Barren Goose	<i>Cereopsis novaehollandiae</i>						r (l)							Gu		A
Caspian Tern	<i>Hydroprogne caspia</i>						u								l	
Cattle Egret	<i>Ardea ibis</i>						r							2 Gu	3	

Birds of the Riverina 1964-1972

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Channel-billed Cuckoo	<i>Scythrops novaehollandiae</i>													x		A
Chestnut Quail-thrush	<i>Cinclosoma castanotum</i>						u	u			Z		r			
Chestnut Teal	<i>Anas castanea</i>						o			x			o		3	
Chestnut-breasted Quail-thrush	<i>Cinclosoma castaneothorax</i>													G		A
Chestnut-crowned Babbler	<i>Pomatostomus ruficeps</i>						r				Z				l	A
Chestnut-rumped Heathwren	<i>Hylacola pyrrhopygia</i>									x						
Chestnut-rumped Thornbill	<i>Acanthiza uropygialis</i>	3				3	u	o	?	x	Z		oB		l	
Cockatiel	<i>Nymphicus hollandicus</i>	l	2	2	ll	3	o.B	u		B	Z	x	oB		l	
Collared Sparrowhawk	<i>Accipiter cirrocephalus</i>						u		r	B		x	r		3	
Common Blackbird	<i>Turdus merula</i>	l				l	u.B			B		x			3	
Common Bronzewing	<i>Phaps chalcoptera</i>	l	l			2	o	c.B	o	B	Z	x	r		2	
Common Greenfinch	<i>Chloris chloris</i>						r									A
Common Greenshank	<i>Tringa nebularia</i>						r						r		3	
Common Myna	<i>Acridotheres tristis</i>														3	
Common Pheasant	<i>Phasianus colchicus</i>													h		A
Common Sandpiper	<i>Tringa hypoleucos</i>															N
Common Starling	<i>Sturnus vulgaris</i>	75	l			76	c.B	o.B		B	Z	x	o		l	
Cotton Pygmy-goose	<i>Nettapus coromandelianus</i>													px		A
Crescent Honeyeater	<i>Phylidonyris pyrrhopterus</i>													p		
Crested Bellbird	<i>Oreica gutturalis</i>						r	o			Z		u		2	
Crested Pigeon	<i>Ocyphaps lophotes</i>	ll	2l			32	c.B	c.B	c.B	B	Z	x	c		2	
Crested Shrike-tit	<i>Falcunculus frontatus</i>	2				2	u	r		B		x	r		2	
Crimson Chat	<i>Epthianura tricolor</i>						u	r		B	Z		u		3	
Crimson Rosella	<i>Platycercus elegans</i>						u			x					3	
Crimson Rosella (Adelaide)	<i>Platycercus elegans adalaidae</i>									x						
Crimson Rosella (Yellow)	<i>Platycercus elegans flaveolus</i>	38	4			42	o.B			B	Z		oB	h		
Curlew Sandpiper	<i>Calidris ferruginea</i>						u			x				x	3	
Diamond Dove	<i>Geopelia cuneata</i>						u	r		B			r	x	2	
Diamond Firetail	<i>Stagonopleura guttata</i>	25				25	o	c		B		x	oB	h	2	
Dollarbird	<i>Eurystomus orientalis</i>						o	r		B		x			l	
Double-banded Plover	<i>Charadrius bicinctus</i>						u								l	
Double-barred Finch	<i>Taeniopygia bichenovii</i>						u	c.B		B					3	
Dusky Moorhen	<i>Gallinula tenebrosa</i>						o.B	u		B	Z	x	cB		3	
Dusky Woodswallow	<i>Artamus cyanopterus</i>		l			l	o	u.B		B	Z		oB	x	l	
Eastern Barn Owl	<i>Tyto javanica</i>						o.B	c		x			r	p.G	l	
Eastern Grass Owl	<i>Tyto longimembris</i>						u									A
Eastern Great Egret	<i>Ardea modesta</i>		l	l	2	l	u			x	Z		uB		3	
Eastern Koel	<i>Eudynamys scolopacea</i>															N
Eastern Osprey	<i>Pandion cristatus</i>															A
Eastern Rosella	<i>Platycercus eximius</i>	12	l	l	l	13	o.B	r	c	B	Z	x	rB		3	
Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>						r						r			

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Eastern Whipbird	<i>Psophodes olivaceus</i>													x		
Eastern Yellow Robin	<i>Eopsaltria australis</i>	1				1	u	c.B	c	B	Z		rB	x	3	
Elegant Parrot	<i>Neophema elegans</i>						r									A
Emu	<i>Dromaius novaehollandiae</i>						c.B	c			ZB		r	x	1	
Eurasian Coot	<i>Fulica atra</i>		2			2	o			x	Z	x	u		3	
Eurasian Skylark	<i>Alauda arvensis</i>													G	3	A
Eurasian Tree Sparrow	<i>Passer montanus</i>						o	r						h		A
European Goldfinch	<i>Carduelis carduelis</i>	65				65	o			B	Z	x	o		1	
Fairy Martin	<i>Petrochelidon ariel</i>	12	134	134	9-12	146	a.B	c		B	Z	x	cB		2	
Fan-tailed Cuckoo	<i>Cacomantis flabelliformis</i>						u	c		x			r		1	
Flame Robin	<i>Petroica phoenicea</i>	17				17	o	r		x		x			1	
Fork-tailed Swift	<i>Apus pacificus</i>						r								1	
Freckled Duck	<i>Stictonetta naevosa</i>						rB			B					1	
Fuscous Honeyeater	<i>Lichenostomus fuscus</i>						r	r							1	
Galah	<i>Eolophus roseicapillus</i>	3	113	22	10-12	116	a.B	a.B	a.B	B	Z	x	aB		2	
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>						r					x		x		
Gilbert's Whistler	<i>Pachycephala inornata</i>						u	u		x	Z			G	2	
Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i>						u.B	u		B						
Glossy Ibis	<i>Plegadis falcinellus</i>		18	18	12	18	rB			x	Z		u		2	
Golden Whistler	<i>Pachycephala pectoralis</i>	9				9	o	o		x		x	r	x	1	
Golden-headed Cisticola	<i>Cisticola exilis</i>						u			B					3	
Great Cormorant	<i>Phalacrocorax carbo</i>		9	9	10-1	9	c.B			x	Z	x	r		1	
Great Crested Grebe	<i>Podiceps cristatus</i>						u				Z	x	r		2	
Grey Butcherbird	<i>Cracticus torquatus</i>	1				1	u	c		B	Z		u	G	2	
Grey Currawong	<i>Strepera versicolor</i>						u								1	
Grey Currawong (Black-winged)	<i>Strepera versicolor melanoptera</i>											x	u			A
Grey Falcon	<i>Falco hypoleucos</i>						r					x				
Grey Fantail	<i>Rhipidura albiscapa (fuliginosa)</i>	20				20	c.B	c	c	B	Z	x	uB	x	2	
Grey Goshawk	<i>Accipiter novaehollandiae</i>						r						r			A
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	13				13	c.B	c.B		B	Z	x	r		3	
Grey Teal	<i>Anas gracilis</i>	5	4	4	12-1	9	c.B			B	Z	x	c		2	
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>	7	2			9	o.B	u		B	Z	x	u		2	
Grey-fronted Honeyeater	<i>Lichenostomus plumulus</i>						r	u							1	
Ground Cuckoo-shrike	<i>Coracina maxima</i>						u.B				Z		r		1	
Gull-billed Tern	<i>Gelochelidon nilotica</i>						r			x	Z		r		2	
Hardhead	<i>Aythya australis</i>						o			x	Z		r		3	
Hoary-headed Grebe	<i>Poliiocephalus poliocephalus</i>						u.B			B	Z	x	r		3	
Hooded Robin	<i>Melanodryas cucullata</i>						o	o		x	Z		uB	G	3	
Horsfield's Bronze-Cuckoo	<i>Chalcites basalis</i>	2				2	o	o		x	Z	x	r		1	
Horsfield's Bushlark	<i>Mirafra javanica</i>		7			7	o.B			B	Z		u		1	
House Sparrow	<i>Passer domesticus</i>	80	5			85	c.B	o		B	Z	x	o		1	
Inland Dotterel	<i>Charadrius australis</i>						r				Z					
Inland Thornbill	<i>Acanthiza apicalis</i>						r	r?		B	Z				1	

Birds of the Riverina 1964-1972

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Intermediate Egret	<i>Ardea intermedia</i>						r			x	Z				3	
Jacky Winter	<i>Microeca fascians</i>	4				4	u	c.B		B	Z		r		3	
Latham's Snipe	<i>Gallinago hardwickii</i>	1				1	u			x	Z	x	r		3	
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	18	16	2	11	34	a.B	c.B	c	B	Z	x	c.B		3	
Leaden Flycatcher	<i>Myiagra rubecula</i>						r			x					1	
Letter-winged Kite	<i>Elanus scriptus</i>						r						r			
Lewin's Rail	<i>Lewinia pectoralis</i>						r					x		x		
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	1	6	6	12-2	7	o.B			x	Z	x	u		3	
Little Button-quail	<i>Turnix velox</i>	2	3			5	o	u		B	Z			G	2	
Little Corella	<i>Cacatua sanguinea</i>						u								3	
Little Crow	<i>Corvus bennetti</i>						a.B				Z				1	A
Little Curlew	<i>Numenius minutus</i>													x		
Little Eagle	<i>Hieraetus morphnoides</i>	1				1	u	u		B	Z					
Little Egret	<i>Egretta garzetta</i>						r				Z				1	
Little Friarbird	<i>Philemon citreogularis</i>	93	5	5	1	98	c	o		B	Z		o		2	
Little Grassbird	<i>Megalurus gramineus</i>	29				29	u			B	Z		u.B			
Little Lorikeet	<i>Glossopsitta pusilla</i>						r	no recent								
Little Pied Cormorant	<i>Microcarbo melanoleucos</i>		329	328	10-2	329	c.B	u		B	Z		r	G	3	
Little Raven	<i>Corvus mellori</i>	4				4	o	o		B	Z				2	
Long-billed Corella	<i>Cacatua tenuirostris</i>						u			x					3	
Long-toed Stint	<i>Calidris subminuta</i>															N
Magpie Goose	<i>Anseranas semipalmata</i>						r(2)									
Magpie-lark	<i>Grallina cyanoleuca</i>	25	6	4	10	31	c.B	c.B	c	B	Z	x	o.B		2	
Major Mitchell's Cockatoo	<i>Lophochroa leadbeateri</i>						u	r		x	Z		r		1	
Malleefowl	<i>Leipoa ocellata</i>						r.B						r.B			
Marsh Sandpiper	<i>Tringa stagnatilis</i>						r				Z		r		3	
Masked Lapwing	<i>Vanellus miles</i>										Z				2	A
Masked Lapwing (Spur-winged Plover)	<i>Vanellus miles novaehollandiae</i>	4	1	1	10	5	c.B	u		B		x	c	x		
Masked Owl	<i>Tyto novaehollandiae</i>						r									
Masked Woodswallow	<i>Artamus personatus</i>						o	c		x	Z		r	x	1	
Mistletoebird	<i>Dicaeum hirundinaceum</i>	4				4	u.B.	o.B		B			r	h	1	
Mulga Parrot	<i>Psephotus varius</i>						u	o		x	Z		r		1	
Musk Duck	<i>Biziura lobata</i>	4				4	o.B			x	Z		r	x	3	
Musk Lorikeet	<i>Glossopsitta concinna</i>						r									
Mute Swan	<i>Cygnus olor</i>													G		A
Nankeen Kestrel	<i>Falco cenchroides</i>	5	31	6	11-1	36	c.B	c	o.B	B	Z	x	o		1	
Nankeen Night-Heron	<i>Nycticorax caledonicus</i>						o.B	r		x	Z		u		1	
Noisy Friarbird	<i>Philemon corniculatus</i>						o	o		x		x	r		3	
Noisy Miner	<i>Manorina melanocephala</i>	69	14	9	10-12	83	c.B	c		B	Z	x	o.B		2	
Northern Mallard	<i>Anas platyrhynchos</i>						u.B								2	
Olive Whistler	<i>Pachycephala olivacea</i>													x		
Olive-backed Oriole	<i>Oriolus sagittatus</i>						r	u		x		x	r		3	
Orange Chat	<i>Epthianura aurifrons</i>						r			B	Z		o.B		1	
Oriental Pratincole	<i>Glareola maldivarum</i>													G		A



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Pacific Black Duck	<i>Anas superciliosa</i>	9				9	c.B	c		B	Z	x	cB		3	
Pacific Golden Plover	<i>Pluvialis fulva</i>						r								3	
Painted Button-quail	<i>Turnix varius</i>						r	u		x	Z				1	
Painted Honeyeater	<i>Grantiella picta</i>						r	u.B							1	
Pallid Cuckoo	<i>Cacomantis pallidus</i>						o.B	c		x		x	u	h	1	
Peaceful Dove	<i>Geopelia striata</i>	15				15	c.B	c		B	Z	x	uB		2	
Pectoral Sandpiper	<i>Calidris melanotos</i>						r			x						
Peregrine Falcon	<i>Falco peregrinus</i>						o.B	o	o.B	B			o		3	
Pheasant Coucal	<i>Centropus phasianinus</i>													h		A
Pied Butcherbird	<i>Cracticus nigrogularis</i>	8	13			21	c.B	c	c	B	Z	x	r	SK	2	
Pied Cormorant	<i>Phalacrocorax varius</i>						u					x	r		2	
Pied Currawong	<i>Strepera graculina</i>	5				5	o	o		x		x	u			
Pied Honeyeater	<i>Certhionyx variegatus</i>						r								3	
Pilotbird	<i>Pycnophilus floccosus</i>															N
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>						o.B			B	Z	x		x	3	
Pink Robin	<i>Petroica rodinogaster</i>															N
Plains-wanderer	<i>Pedionomus torquatus</i>		1			1	r						r			
Plumed Whistling-Duck	<i>Dendrocygna eytoni</i>						u						r		1	
Powerful Owl	<i>Ninox strenua</i>															N
Purple Swamphen	<i>Porphyrio porphyrio</i>						o.B			B	Z	x	u		3	
Purple-crowned Lorikeet	<i>Glossopsitta porphyrocephala</i>						r									
Rainbow Bee-eater	<i>Merops ornatus</i>	4	6	6	12	10	c.B	c.B	c.B	B	Z	x	oB		1	
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>														1	N
Red Knot	<i>Calidris canutus</i>															N
Red Wattlebird	<i>Anthochaera carunculata</i>						o	o		B		x			3	
Red-backed Button-quail	<i>Turnix maculosa</i>						r									A
Red-backed Kingfisher	<i>Todiramphus pyrrhopygius</i>	1				1	c.B	o		B	Z		o		3	
Red-browed Finch	<i>Neochmia temporalis</i>						o		c.B	B		x		p,x	3	
Red-browed Treecreeper	<i>Climacteris erythrops</i>															N
Red-browed Pardalote	<i>Pardalotus rubricatus</i>													x		
Red-capped Plover	<i>Charadrius ruficapillus</i>						r	o			Z				3	
Red-capped Robin	<i>Petroica goodenovii</i>	29				29	o.B	c	c	B	Z		uB		1	
Red-chested Button-quail	<i>Turnix pyrrhorostrax</i>		2			2	u									
Red-kneed Dotterel	<i>Erythronyx cinctus</i>		1			1	u			B	Z		uB		3	
Red-lored Whistler	<i>Pachycephala rufogularis</i>						r									A
Red-necked Avocet	<i>Recurvirostra novaehollandiae</i>						u			x	Z		r		3	
Red-necked Stint	<i>Calidris ruficollis</i>						o								3	
Red-rumped Parrot	<i>Psephotus haematotus</i>	101	65	10	10-11	166	a.B	c.B		B	Z	x	aB		1	
Red-tailed Black-Cockatoo	<i>Calyptrorhynchus banksii</i>						r						r	x		
Redthroat	<i>Pyrrholaemus brunneus</i>													x		A

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Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>						r									A
Red-winged Parrot	<i>Aprosmictus erythropterus</i>															N
Regent Honeyeater	<i>Anthochaera phrygia</i>								r				r			
Regent Parrot	<i>Polytelis anthopeplus</i>						u. B		r							A
Restless Flycatcher	<i>Myiagra inquieta</i>	6				6	o.B	o		B	Z	x	oB		l	
Rock Dove	<i>Columba livia</i>						c			B						
Rose Robin	<i>Petroica rosea</i>															N
Royal Spoonbill	<i>Platalea regia</i>						u			x	Z		u		3	
Ruddy Turnstone	<i>Arenaria interpres</i>						r									
Ruff	<i>Philomachus pugnax</i>															N
Rufous Fantail	<i>Rhipidura rufifrons</i>															N
Rufous Songlark	<i>Cincloramphus mathewsi</i>	l				l	u	u		B	Z	x	o	x	l	
Rufous Whistler	<i>Pachycephala rufiventris</i>	43				43	c	c	o. B	x	Z	x	o		l	
Sacred Kingfisher	<i>Todiramphus sanctus</i>	10				10	o	o. B		B	Z	x	u		2	
Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>						r									
Satin Flycatcher	<i>Myiagra cyanoleuca</i>															N
Scarlet Honeyeater	<i>Myzomela sanguinolenta</i>															N
Scarlet Robin	<i>Petroica boodang</i>	l				l	u			x		x			l	
Scarlet Robin (Pacific?)	<i>Petroica multicolor</i>															A
Scarlet-chested Parrot	<i>Neophema splendida</i>						r									A
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>						o			x	Z				3	
Shining Bronze-Cuckoo	<i>Chalcites lucidus plagosus</i>						r			x		x	r		l	
Short-tailed Grasswren	<i>Amytornis merrotsyi</i>													h		A
Shy Heathwren	<i>Hylacola cauta</i>						r	u			Z			p		
Silver Gull	<i>Chroicocephalus novaehollandiae</i>						u			x	Z		r		2	
Silvereye (Grey-backed )	<i>Zosterops lateralis</i>	13				13	o	c. B		B		x	o	xp	3	
Singing Honeyeater	<i>Lichenostomus virescens</i>						o	u		B	Z				l	
Sooty Owl	<i>Tyto tenebricosa</i>													G		A
Southern Boobook	<i>Ninox novaeseelandiae</i>	4				4	c.B	r		B			r		l	
Southern Scrub-robin	<i>Drymodes brunneopygia</i>						r				Z					
Southern Whiteface	<i>Aphelocephala leucopsis</i>	46	2			48	c	u		B	Z	x	cB		l	
Spangled Drongo	<i>Dicrurus bracteatus</i>															N
Speckled Warbler	<i>Chthonicola sagittata</i>						r	o. B		B	Z		r		3	
Spiny-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>	2				2	o	c		x	Z		o		l	
Splendid Fairy-wren (Black-backed)	<i>Malurus splendens melanotus</i>						u	o		x	Z		uB	p	2	
Spotless Crake	<i>Porzana tabuensis</i>						r			B	Z	x	r			
Spotted Bowerbird	<i>Ptilonorhynchus maculatus</i>						r				Z				3	
Spotted Dove	<i>Streptopelia chinensis</i>															A
Spotted Harrier	<i>Circus assimilis</i>						r			B	Z				l	
Spotted Nightjar	<i>Eurostopodus argus</i>						u	r		x	Z					
Spotted Pardalote	<i>Pardalotus punctatus</i>	4				4	o			x			r	x	3	
Spotted Pardalote (Yellow-tailed)	<i>Pardalotus punctatus xanthopygus</i>						u			x	Z			x		A

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Spotted Quail-thrush	<i>Cinclosoma punctatum</i>															N
Square-tailed Kite	<i>Lophoictinia isura</i>						r									
Straw-necked Ibis	<i>Threskiornis spinicollis</i>		1173	1173	12	1173	c.B	u		x	Z	x	c		l	
Striated Fieldwren	<i>Calamanthus fuliginosus</i>						r					x				A
Striated Pardalote	<i>Pardalotus striatus substriatus</i>	265				265	c	c.B		B	Z	x			2	
Striated Pardalote (Eastern)	<i>Pardalotus striatus ornatus</i>	6				6	o			x			o			A
Striated Pardalote (Yellow tipped)	<i>Pardalotus striatus striatus</i>	1				1	r	u		x						A
Striated Thornbill	<i>Acanthiza lineata</i>						u	r	c	x		x			2	
Striped Honeyeater	<i>Plectorhyncha lanceolata</i>	7				7	o	c	l	B	Z		u		l	
Stubble Quail	<i>Coturnix pectoralis</i>	11	185			196	c.B	c		B		x	c		l	
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>						a.B	r		B	Z	x	c		3	
Superb Fairy-wren	<i>Malurus cyaneus</i>						o	r		B	Z	x	r		3	
Superb Lyrebird	<i>Menura novaehollandiae</i>															N
Superb Parrot	<i>Polytelis swainsonii</i>	9				9	o.B	r		B	Z		o.B		3	
Swamp Harrier	<i>Circus approximans</i>						r			x	Z		r		3	
Swift Parrot	<i>Lathamus discolor</i>						r	r								
Tawny Frogmouth	<i>Podargus strigoides</i>	2	3			5	c.B	c.B		B	Z	x	o.B		l	
Tawny-crowned Honeyeater	<i>Glyciphila melanops</i>						r									A
Tree Martin	<i>Petrochelidon nigricans</i>	11	1			12	o.B	c		B	Z		c.B		l	
Turquoise Parrot	<i>Neophema pulchella</i>							r		x						
Varied Sittella (Black-capped)	<i>Daphoenositta chrysoptera pileata</i>															A
Varied Sittella (Orange-winged)	<i>Daphoenositta chrysoptera chrysoptera</i>						r	o		B	Z		r.B		l	
Variegated Fairy-wren (Purple-backed)	<i>Malurus lamberti assimilis</i>						o	c.B		B	Z		u.B	p	l	
Wandering Whistling-Duck	<i>Dendrocygna arcuata</i>						r							h	3	
Wedge-tailed Eagle	<i>Aquila audax</i>		2	2	7,10	2	o.B	o.B	o.B	B	Z	x	o.B		l	
Weebill	<i>Smicromis brevirostris</i>	5				5	o	c		B	Z		r	x	l	
Welcome Swallow	<i>Hirundo neoxena</i>	76	5	5	10-12	81	c.B	c		B	Z	x	o.B		2	
Western Gerygone	<i>Gerygone fusca</i>	2				2	r	c		B	Z		r		l	
Whimbrel	<i>Numenius phaeopus</i>						r									A
Whiskered Tern	<i>Chlidonias hybrida</i>						u.B			x	Z		u.B?		2	
Whistling Kite	<i>Haliastur sphenurus</i>						c.B			B	Z	x	c	x	3	
White-backed Swallow	<i>Cheramoeca leucosterna</i>	1	10	10	10	11	c.B	o.B		B	Z	x	o		l	
White-bellied Cuckoo-shrike	<i>Coracina papuensis</i>						r			x					l	
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>						u.B(1)			B					3	
White-breasted Woodswallow	<i>Artamus leucorhynchus</i>	1	2	2	9	3	o	u		B	Z		o.B		2	
White-browed Babbler	<i>Pomatostomus superciliosus</i>						u	c.B		B	Z	x	o.B	<sup>x</sup> B.G	l	
White-browed Scrubwren	<i>Sericornis frontalis</i>						u								3	

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White-browed Treecreeper	<i>Climacteris affinis</i>						r				Z					
White-browed Woodswallow	<i>Artamus superciliosus</i>						o	c		B	Z		r		3	
White-eared Honeyeater	<i>Lichenostomus leucotis</i>						r	c.B		B	Z		r		3	
White-faced Heron	<i>Egretta novaehollandiae</i>	1	1	1	11	2	o.B	u		B	Z	x	c		3	
White-fronted Chat	<i>Epthianura albifrons</i>	8	2	2	9	10	o	u		B	Z	x	u		3	
White-fronted Honeyeater	<i>Purnella albifrons</i>						u	r			Z				2	
White-headed Pigeon	<i>Columba leucomela</i>													G		A
White-naped Honeyeater	<i>Melithreptus lunatus</i>						r								3	
White-necked Heron	<i>Ardea pacifica</i>		17	17	10-1	17	o.B	u		x	Z	x	oB		3	
White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>	1271	11			1282	a.B	c.B	o	B	Z	x	cB		2	
White-throated Gerygone	<i>Gerygone albogularis</i>	1				1	r									
White-throated Needletail	<i>Hirundapus caudacutus</i>						u	o	o						3	
White-throated Nightjar	<i>Eurostopodus mystacalis</i>													x		
White-throated Treecreeper	<i>Cormobates leucophaea</i>						u	r	c.B	B					1	
White-winged Black Tern	<i>Chlidonias leucopterus</i>															N
White-winged Chough	<i>Corcorax melanorhamphos</i>	1	4	3	10	5	o.B	c.B	c.B	B	Z	x	oB		3	
White-winged Fairy-wren	<i>Malurus leucopterus</i>						o				Z				3	
White-winged Triller	<i>Lalage sueurii</i>	22				22	o.B	o.B		B	Z	x	o		3	
Willie Wagtail	<i>Rhipidura leucophrys</i>	53	1			54	c.B	c.B	c	B	Z	x	cB		3	
Wonga Pigeon	<i>Leucosarcia melanoleuca</i>															N
Wood Sandpiper	<i>Tringa glareola</i>						r									
Yellow Thornbill	<i>Acanthiza nana</i>	26				26	c.B	c	?	B	Z		r		3	
Yellow-billed Spoonbill	<i>Platalea flavipes</i>		13	13	10-1	13	o.B			x	Z	x	oB	x	3	
Yellow-faced Honeyeater	<i>Lichenostomus chrysops</i>						r								2	
Yellow-plumed Honeyeater	<i>Lichenostomus ornatus</i>						u	u		x	Z		r		3	
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>	157	1			158	a.B	c.B		B	Z	x	cB		3	
Yellow-tailed Black Cockatoo	<i>Calyptorhynchus funereus</i>															N
Yellow-throated Miner	<i>Manorina flavigula</i>	29				29	o.B	c.B		B	Z		u		3	
Yellow-tufted Honeyeater	<i>Lichenostomus melanops</i>						r	r		x						
Zebra Finch	<i>Taeniopygia guttata</i>	30				30	o	c	o	B	Z	x	cB	x	3	
	TOTALS	3139	2499	1980	35	5638	291	148	37	207	174	104	185	78		
Number of species		95	67	36	36	118	291	148	37	207	174	104	185	78	1=90 2=48 3=94	N=23 A=42

Of the two recent attempts to list the birds occurring in the Riverina, the publication Bird Trails of the Riverina and the South West Slopes of NSW (2011) listed 302 species and the Atlas 1 and 2 (Barrett and Silcocks 2002) listed 232 for the Riverina Bioregion.

A comparison of the status of species in 1964-1972 with the trend in populations indicated in the Atlas results between 1977 and 2001 is shown in Table 2. Of the 9 species assessed as abundant in 1964-1972, 3 were reported as decreasing during the 1988-2001 period (Fig. 4a,b,c) (Australian White Ibis *Threskiornis molucca*, Little Crow *Corvus bennetti* and Red-rumped Parrot *Psephotus haematonotus*). Of the 37 assessed as common, 14 were declining. Out of 78 assessed as occasional 29 were declining. Out of 56 assessed as uncommon 19 were declining and out of 46 assessed as rare 22 were declining.

## Discussion

A total of 348 species Table 1 are recorded for the Riverina area. In my list of 291 species covering the whole of the Riverina between 1964 -1972, 95 species were banded on the Inland Fisheries Research Station (IFRS), 67 species were banded elsewhere throughout the Riverina, of which 44 of these species were also banded on the IFRS and only 23 species were banded only outside the IFRS (total species banded 118 species). One hundred and seventy three additional species were sighted within the Riverina by me taking my total to 291. An additional 57 records have been added to the Riverina list from reliable sources. Both The Rock Nature Reserve list and the Cocoparra National Park List were from well timbered areas from elevated hilly and or rocky country within essentially flat plains. These two areas contributed 1 (Regent Honeyeater *Anthochaera phrygia*) and 1 (Turquoise Parrot *Neophema pulchella*) species respectively to the overall Riverina list. Hobbs' list, added 3 species (*Neophema pulchella*, Crimson Rosella (Adelaide) *Platycercus elegans flaveolus* and the Chestnut-rumped Heathwren *Hylacola pyrrhopygia*) to the overall list. John Izzard's list contributed 1 species (Masked Lapwing *Vanellus miles*) to the overall list. The Wilson's Big Springs list contributed 2 species Australian Magpie (White-backed) *Cracticus tibicen hypoleuca*, Grey Currawong (Black-winged) *Strepera versicolor melanopectera* to the overall list. The Miscellaneous list added 21 species to the overall list for the Riverina.

The recent attempts to establish a check list of the birds of the Riverina are found in Bird Trails of the Riverina and the South West Slopes of NSW (2011), where 302 species were listed, and the Atlas reports 1 and 2 covering the 1977-1981 and the 1998-2001 periods in which 232 were recorded in the Riverina Bioregion (Barrett and Silcocks 2002). The area covered in the 'Bird Trail' list extends to the east of that used in this study incorporating the south west slopes (Fig. 1) which will account for many of the species differences (Table 1), such as Pilotbird *Pycnophilus floccosus*, Rose Robin *Petroica rosea*, Scarlet Honeyeater *Myzomela sanguinolenta*, Red-browed Treecreeper *Climacteris erythroptera*, Wonga Pigeon *Leucosarcia melanoleuca* and Spangled Drongo *Dicrurus bracteatus*. There are 42 species reported in this study (1940-1983) which are not listed in the 2011 Bird

Trails list (Table 1). Most of these are introduced, marginal to the area or were uncommon or rare at the time, and the lesser numbers in the Bird Trail list probably reflects the shorter period of time with less intense, repeated sampling over which the records were made. Most of the species in the Bird Trail 2011 list not recorded in my earlier study (Table1) are rare visitors or outside the range covered in my list. The atlas list of 232 species covering the Riverina Bioregion does not go as far east as that covered in this study, which reports 348 species. The area covered could account for the fewer species since the time period over which species were recorded was similar (Feb 1964 to Jan 1972, 8 years; and Jan 1977–Dec. 1981 and Aug. 1998–Dec. 2001, combined 8 years 5 months). When comparing status in terms of species numbers for 1964 to1983 with trends shown between the two Atlas periods 1977-1981 to 1998 to 2001 a larger proportion of species classed as occasional were either increasing or decreasing by  $\geq 20\%$  over that period (Table 2).

The status of birds based on the Hindwood(1940) list was not very different from that in my (1964-1972) list apart from the larger percentage classed as rare in Hindwood (1940) (Fig.3). The lower numbers recorded in the Hindwood list could be due to the shorter periods of time over which recordings were made, or the climate at the time. The differences in rare species are not surprising since these species are rarely seen over quite long periods.

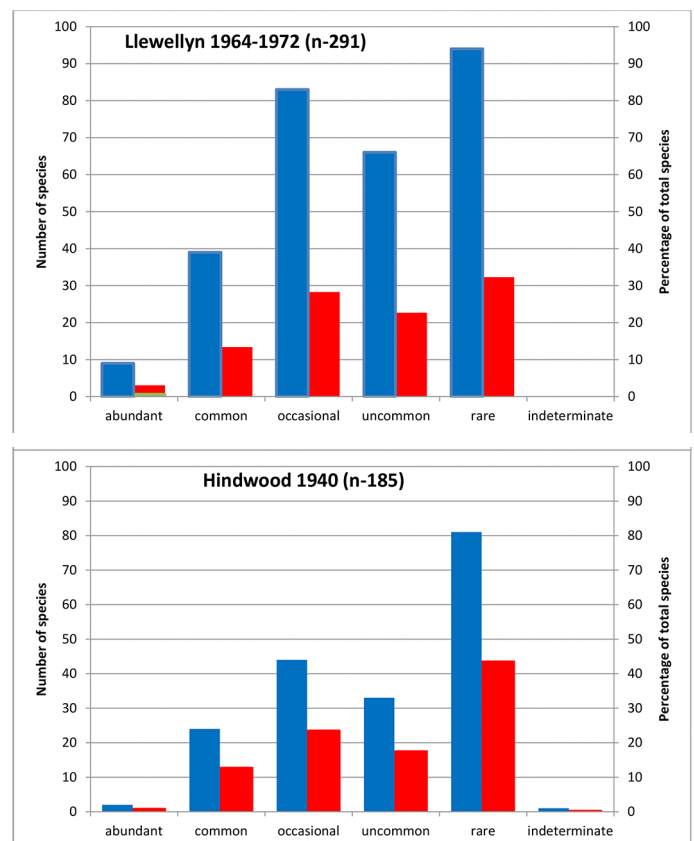


Fig. 3. Comparison of status of bird species estimated from the contents of Hindwood (1940) and my records from 1964 to 1972. Blue - number of species at each status and red - percentage of total number of species assessed at each status (n= 291 and 185 respectively).



**Table 2.** Status of 232 species between 1964 -1972 , and an indication of whether these species increased in numbers, stayed the same or decreased between 1977-1981 and 1998-2001 as recorded in the Atlas 1 and 2 (Barrett and Silcocks 2002).

	Status 1964-1972	Atlas 1 and 2 1977-1981 to 1998-2001		
	Totals	≥ 20% Increase	Stable	≥ 20% decrease
		1	2	3
Abundant	9	3	3	3
Common	37	14	12	11
Occasional	78	29	10	39
Uncommon	56	19	14	23
Rare	46	22	8	16
Unknown	6	3	1	2
Totals	232	90	48	94

More recent studies have commented on changing abundance. Schrader (2001) recorded 255 species over a period of 25 years up to 2001 in the Lachlan region, which only covers the northern section of the Riverina. He did not indicate the abundance but did classify their occurrence as to whether they were resident, nomadic, migrants, or vagrants, without identifying individual species in his paper. He noted that changes had occurred in distribution and population in response to climatic conditions over the period. He predicted that progressive fragmentation and isolation of woodland fragments will cause the loss of further species from the region.

Breeding of birds in the region indicated that most species bred in spring to early summer from October to January. However White-fronted Chat *Epthianura albifrons* and

White-breasted Wood-swallow *Artamus leucorhynchus* were recorded breeding earliest in September and Wedge-tailed Eagle *Aquila audax* in July. The major exception to this is the waterbirds which breed in response to floods whenever they occurred, for example Australasian Darter *Anhinga novaehollandiae*, Little Pied Cormorant *Microcarbo melanoleucos*, Little Black Cormorant *Phalacrocorax sulcirostris* and *Threskiornis molucca* bred at Dixons Dam (Lat. 34°50'S Long. 146°37'E) near the IFRS as late as February. All the 9 species classed as Abundant in this study were reported breeding, whereas only 5% of the Rare (95) species were reported breeding. Amongst the Common, Occasional and Uncommon species 82.1% (n=32), 44.6% (n=83) and 18.2% (n=66) respectively were found breeding.

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